

### REMARKS

The Office Action mailed October 22, 2003 has been carefully reviewed and the foregoing amendment has been made in consequence thereof.

Claims 6, 7, 9-20 are now pending in this application. Claims 6, 7, 10, 12-18, and 20 stand rejected. Claims 1-5, 8, 9, 11, and 19 have been canceled.

The objection to the drawings under 37 C.F.R. 1.83(a) is respectively traversed. Claims 12 and 16 each recite that the deflagration chamber is annular and extends circumferentially around the engine exhaust centerbody. Applicants submit that the deflagration chambers, as is recited in Claims 12 and 16, are correctly illustrated schematically in Figures 1 and 2, and are supported in the specification. For example, at paragraph [0014], lines 1-2, the specification recites “[d]eflagration chamber 100 is contoured and is positioned radially outwardly from centerbody 56 in flow communication with core engine 30.” Additionally, at lines 7-12 of paragraph [0014], the specification recites “In the exemplary embodiment, deflagration chamber 100 is annular and extends circumferentially around centerbody 56 within engine nozzle 50. In an alternative embodiment, deflagration chamber 100 is non-annular and engine 10 includes a plurality of deflagration chambers 100 extending axi-symmetrically and circumferentially around centerbody 56....”

Moreover, Applicants submit that the cross-sectional views of deflagration chamber 100 illustrated schematically in Figures 1 and 2 correctly illustrate each deflagration chamber 100 as being annular and as extending circumferentially around the engine centerbody 56. Accordingly, Applicants respectfully submit that an artisan of ordinary skill in the art, after reading the specification in light of the Figures would understand the structure of the deflagration chamber as recited in the claims, after viewing the Figures in light of the specification, and as such, Applicants submit that a detailed illustration of the deflagration chamber would not be essential for a proper understanding of the invention by one skilled in the art.

Claims 13 and 17 each recite that the deflagration chamber comprises a plurality of deflagration chambers spaced circumferentially around the engine exhaust centerbody.

Applicants submit that the deflagration chambers recited in Claims 13 and 17 are correctly illustrated schematically in Figures 1 and 2, and that such recitations are supported in the specification. For example, at paragraph [0014], lines 1-2, the specification recites “[d]eflagration chamber 100 is contoured and is positioned radially outwardly from centerbody 56 in flow communication with core engine 30.” Additionally, at lines 9-12 of paragraph [0014], the specification recites “In an alternative embodiment, deflagration chamber 100 is non-annular and engine 10 includes a plurality of deflagration chambers 100 extending axi-symmetrically and circumferentially around centerbody 56....”

Moreover, Applicants submit that the cross-sectional views of deflagration chamber 100 illustrated schematically in Figures 1 and 2 correctly illustrate that deflagration chamber 100 is annular and extends circumferentially around the engine centerbody 56. Accordingly, Applicants respectfully submit that an artisan of ordinary skill in the art, after reading the specification in light of the Figures would understand the structure of the deflagration chamber as recited in the claims, and as such, a detailed illustration of the deflagration chamber would not be essential for a proper understanding of the invention by one skilled in the art.

For the reasons set forth above, Applicants request that the objections to the drawings be withdrawn.

The rejection of Claims 6, 7 and 9-20 under 35 U.S.C. § 112 is respectfully traversed.

Applicants maintain that the Federal Circuit has opined in Verve LLC v. Crane Cams, Inc., 65 USPQ 2d 1051, 1053-1054 (Fed. Cir. 2002), that “[p]atent documents are written for persons familiar with the relevant field; the patentee is not required to include in the specification information readily understood by practitioners, lest every patent be written as a comprehensive tutorial and treatise for the generalist, instead of a concise statement for persons in the field.” Moreover, Applicants further maintain that the Federal Circuit has made clear that patents are not required to be written as comprehensive tutorial and treatise for the generalist, but are rather written as a concise statement for persons in the field. Verve LLC v. Crane Cams, Inc., 65 USPQ 2d 1051, 1053-1054 (Fed. Cir. 2002). As described in more detail below, Applicants respectfully submit that the present application is written as a concise statement that would be understood by one of ordinary skill in the art.

With respect to the structure of the deflagration chamber 100, paragraphs [0013] and [0014], for example, recite that deflagration chamber 100 is a “hollow chamber” that is “contoured and is positioned radially outwardly from centerbody 56 in flow communication with core engine 30.” Moreover, lines 3-14 of paragraph [0014] recite additional structural considerations regarding deflagration chamber 100 including the limitation that “an upstream end of deflagration chamber 100 is positioned a farther distance from centerbody 56 than a downstream end of deflagration chamber 100.”

With respect to the detonation chamber 102, paragraph [0013], for example, recites that detonation chamber 102 is a “hollow chamber”, and paragraph [0015], for example, recites that detonation chamber 102 is positioned at deflagration chamber downstream end 106 and in flow communication with deflagration chamber 100. Paragraph [0015] also recites that “[D]etonation chamber 102 is in serial, axial flow relationship with deflagration chamber 100.” Moreover, as illustrated in Figures 1 and 2, at least a portion flow exiting deflagration chamber 100 enters detonation chamber 102.

With respect to the Examiner’s statements regarding the structure of the vaneless radial nozzles described in the specification, Applicants submit that although Claims 6, 7, 10, 11-18 and 20 do not include any recitations to a “vaneless radial nozzle”, one of ordinary skill in the art would understand a vaneless radial nozzle as recited in the claims and described in the specification. Moreover, Applicants submit that vaneless radial nozzles are known in the art, and as such, one of ordinary skill in the art would understand how a vaneless radial nozzle could be utilized to “accelerate[s] and direct[s] flow from the chamber 100 into detonation chamber 102”, as is described in the specification at paragraph [0015], for example. Furthermore, at paragraph [0019], the specification further recites that “flow exiting deflagration chamber 100 enters detonation chamber 102 through the vaneless radial nozzle which operates above a critical pressure ratio, and combustion is initiated within detonation chamber 102.” Accordingly, Applicants respectfully submit that the description and operation of deflagration chamber 100 and detonation chamber 102 would be understood by one of ordinary skill in the art, after reading the specification in light of the Figures.

Furthermore, Applicants submit that that the term “critical pressure ratio” is a term of art that is commonly used to define operating conditions that may be present within a gas

turbine engine. For example, U.S. Patent No. 6, 505,462, assigned to the same assignee as the present application, describes the differences between deflagration combustion and detonation combustion as being known in the art. Moreover, Applicants respectfully submit that the critical pressure ration term is also described in the specification in terms that one of ordinary skill in the art would understand after reading the specification in light of the Figures. For example, the specification recites at paragraph [0019] that when the pressure ratio across the vaneless radial nozzle is increased above the critical value, detonation occurs within the detonation chamber.

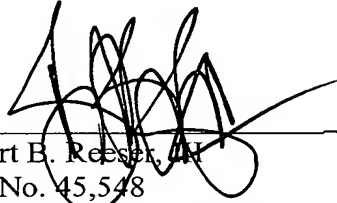
Applicants respectfully submit that the statement in the specification that “[f]uel is supplied to the deflagration chamber 100 such that chamber 100 is operated in a fuel-rich mode of operation” does not imply that no air is available for detonation to occur in detonation chamber 102. Rather, Applicants submit that the specification, however, must be taken as a whole, rather than analyzed only sentence by sentence to determine whether the requirements of Section 112, first paragraph, are met. For example, at paragraph [0014], for example, the specification recites that “Deflagration chamber 100 is coupled in flow communication with a fuel source (not shown) and an air source (not shown) used for atomization”. Furthermore, paragraph [0019], for example, recites that detonation chamber 102 is in flow communication with flowpath 54. Accordingly, Applicants submit that one of ordinary skill in the art, after reading the entire specification, would understand the detonation process within detonation chamber 102.

The Examiner has questioned why fuel in detonation chamber 102 detonates rather than deflagrates. Again, Applicants maintain that patent documents are written for persons familiar with the relevant field; the patentee is not required to include in the specification information readily understood by practitioners, lest every patent be written as a comprehensive tutorial and treatise for the generalist, instead of a concise statement for persons in the field. For example, U.S. Patent No. 6, 505,462, assigned to the same assignee as the present application, describes the differences between deflagration combustion and detonation combustion as being known in the art. Moreover, paragraph [0019] recites that “When this pressure ratio reaches the critical value, detonation occurs within detonation chamber 102.” Applicants maintain that one of ordinary skill in the art, after reading the

entire specification, would understand the interaction of shock patterns in a supersonic flow, and as such would understand the detonation process within the detonation chamber.

In view of the foregoing amendments and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read 'Robert B. Reeser, III', is written over a horizontal line.

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